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Prevalence and Predictive Factors of Heart Failure in Patients Hospitalized in the Medical-Surgical Cardiology Department of the Donka National Hospital in Conakry

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Abstract

Objective: To determine the prevalence and predictive factors of heart failure in patients hospitalized in the medical surgical department in Donka National Hospital. **Materials and Method:** This was a descriptive and analytical cross-sectional study over period of 6 months (July 01 to December 31, 2020) that included patients hospitalized for heart failure in whom informed consent was obtained. The statistical analyzes were carried out by the epi-info software in version 7.2. The qualitative and quantitative variables were compared by the chi-square test. A value of $p < 0.05$ was retained as significant. **Results:** One hundred and fifteen (115) patients were collected in our study with a hospital prevalence of 72.17% (83 cases) of HF. The average age was 52 ± 18 years. A female predominance is noted with an M/F ratio = 0.84. The main CVRDs were hypertension, diabetes and age. The CI was global in 66.27% of cases. ECG signs were dominated by arrhythmias, conduction disturbances, and LVH. Cardiomegaly is noted in 70% of cases ($p < 0.01$). On TTE, LVEF was impaired in 43.55% of cases. The mean length of stay was 12.5 ± 7. The bivariate analysis allowed us to identify several predictive factors positively correlated with the occurrence of HF, namely: hypertension ($p < 0.0003$), diabetes ($p < 0.0000$), tobacco ($p < 0.0023$), the association of hypertension/age ($p < 0.0076$) and/or diabetes ($p < 0.0270$) and comorbidities such as pulmonary

disease ($p < 0.0270$), anemia ($p < 0.0214$) and ischemic attack ($p < 0.0029$). **Conclusion:** Heart failure is a major public health problem. Early identification and management of predictive factors can significantly reduce the morbidity and mortality of HF.

Keywords

Predictors, Heart Failure

1. Introduction

Heart failure (HF) is a clinical syndrome characterized by typical symptoms that may be accompanied by signs caused by structural and/or functional cardiac abnormalities, resulting in reduced cardiac output and/or elevated intracardiac pressures at rest or during stress [1].

It is linked to a defect in filling or ejecting blood, resulting in the appearance of clinical symptoms, the main ones being dyspnea and lower limb edema (congestion) [2]. The epidemiology of heart failure is now well understood. Its evolution has been distinguished in recent years by a steady increase in its prevalence, estimated at 40 million individuals worldwide, representing 1% to 2% of the adult population in developed countries. Two main factors explain this trend: the aging of the population and the growing improvement in management burden of cardiovascular diseases, the ultimate stage of which is heart failure [3] [4]. In Canada, a decrease in average temperature of 10˚C over a week or less (which is common in Quebec) increases the risk of being hospitalized or dying from the main cause of HF by approximately 7% in people over 65 years of age [5]. In France, a proven history of heart failure, impaired renal function, age or an increase in N-terminal-proBNP were the factors that predicted hospitalization for HF [6]. In sub-Saharan Africa, the factors identified as positively correlated with the occurrence of HF, apart from advanced age, were the presence of cardiovascular risk factors (CVRF) or not, large electrocardiographic territories and comorbidities such as infection, anemia and renal failure [7] [8]. There are few studies in Guinea on the predictive factors of heart failure.

The objective of our study was to determine the factors linked to the occurrence of failure in patients hospitalized in the medical-surgical cardiology department of the Donka National Hospital, Conakry University Hospital.

2. Methods

Study Overview: We conducted a descriptive and analytical cross-sectional study at the Medical-Surgical Cardiology Department of Donka National Hospital, from July 1 to December 31, 2020, involving 115 patients.

Inclusion Criteria: Patients hospitalized with signs of right-sided, left-sided, or global HF during the study period and who provided their consent were included.

Data Collection: The following parameters were analyzed: epidemiological

data, CVRF, comorbidities, patient clinical characteristics, clinical presentation of heart failure, electrocardiographic, radiological, and echocardiographic abnormalities, and progression during hospitalization under conventional treatment.

Statistical Analysis: Statistical analysis was performed using Epi info software, version 7.2. Quantitative variables were expressed as mean plus or minus standard deviation. Qualitative variables were expressed as number and percentage. The Chi-square test was used for our association tables with any $p < 0.005$ considered statistically significant.

3. Results

During our study period, we recorded a hospital prevalence of 72.17% (83 cases) related to HF out of 115 hospitalizations. The mean age of our patients was 52 ± 19.80 years, the majority of whom were women (54.22%), with a sex ratio of 0.84. The main cardiovascular risk factors encountered were: hypertension (85.54%), diabetes (59.04%), and age (54.22%). Dyspnea was the most representative functional sign in our study (96.38%), particularly in stages III-IV of NHYA, followed by OMI (80.72%). Clinically, 66.27% of patients were admitted for congestive heart failure, 18.07% for left heart failure, and 15.66% for right heart failure. Bronchopneumopathy was the most representative comorbidity (44.57%), followed by anemia (43.37%) and CA/AF (24.10%). All our patients underwent an electrocardiogram. On chest X-ray, cardiomegaly was present in 70% of cases. Transthoracic echocardiography by the Simpson method found an altered LVEF in 43.55% of cases, preserved in 40.12% of cases and moderately altered in 16.13% of cases.

The average length of stay of our patients was 12.5 ± 7. The evolution was favorable in 86.75% (72 cases) and the remaining 11 cases had an evolution punctuated by complications (unfavorable). The bivariate analysis between patients with or without insufficiency and the predictive factors studied revealed a statistically significant link with hypertension ($p < 0.0003$), diabetes ($p < 0.0000$), smoking ($p < 0.0023$), the association of hypertension and age ($p < 0.0076$) and/or diabetes ($p < 0.0270$) and comorbidities such as anemia ($p < 0.0214$), bronchopneumopathy ($p < 0.0270$) and ischemic attack ($p < 0.0029$). Unlike age ($p < 0.21$), menopause or dyslipidemia and certain comorbidities such as renal failure, AC/AF or hypertensive crisis (p not significant) (Tables 1-4).

Table 1. Patient frequency by CVRF.

Comorbidities	Frequency	Percentage
Anemia	36	43.37
microcytic hypochromic	28	33.73
macrocytic hypochromic	06	9.64
Pulmonary disease	37	44.57
Hypertensive crisis	18	21.69
Arrythmia	31	37.35

Continued

Atrial Fibrillation	20	24.10
Ventricular extrasystoles	11	13.25
Renal Faillure	8	9.64
Ischemia crisis	10	12.05

Table 2. Patient frequency by comorbidities.

Cardiovascular risk factors	Frequency	Percentage
HTA	71	85.54
Diabetis	49	59.04
Age	45	54.22
Menopause	25	30.12
Alcohol	6	7.23
Obesity	6	7.23
tobacco	5	6.02
Dyslipidemia	4	4.82

Table 3. Patient distribution by LVEF (N = 62 out of 83, or 74.70%).

Ejection Fraction	**frequency**	**percentage**
Reduced	27	43.55
Moderately reduced	10	16.13
preserved	25	40.32
TOTAL	62	100.00

Table 4. Distribution of patients with or without heart failure and predictive factors.

Predictive Factors	IC		Total	p-value
	OUI	NON		
Diabetis	49	4	53	0.0000
HTA	71	16	87	0.0003
Ménopause	25	13	38	0.3133
Tobacco	5	9	14	0.0023
Age	59	26	85	0.2156
HTA/Diabetes	37	6	43	0.0270
HTA/Age	35	4	39	0.0076
Anemia	28	3	31	0.0214
AF	20	9	29	0.10
Pulmonary disease	37	6	43	0.0270
Renal Faillure	8	3	11	1.0000
Ischemia crisis	10	12	22	0.0029

4. Discussion

Our study shows that certain cardiovascular risk factors and some comorbidities are frequently associated with the occurrence of heart failure in patients with heart failure in the Medical-Surgical Cardiology Department of Donka National Hospital. They appear more frequent in certain pathologies. Furthermore, this work suggests that the more numerous these CVRFs and/or comorbidities are, the more they worsen the prognosis of heart failure patients. HF was present in 72.17% of cases. Our result is higher than that of Senegal [9], which found 14.28%, but lower than that of Burkina Faso [10], which was 84.5%. This study allowed us to demonstrate that the frequency of heart failure remains high in hospitalized patients in the Medical-Surgical Cardiology Department of Donka National Hospital. The average age of our patients was 52 ± 19.80 years. This corroborates the data in the literature which states that advanced age constitutes a risk factor for the occurrence of cardiovascular diseases.

In our study series, we recorded a female predominance of 54.22% against 45.78% with a sex ratio M/F of 0.84. Hassane B M *et al.* also reported a female predominance in Mali [11]. This can be explained by the predominance of the female sex in the general Guinean population. From the point of view of cardiovascular risk factors for heart failure patients, hypertension was at the top with 85.54% followed by diabetes 59.04% and age 54.22%. Arterial hypertension remains the leading cause of HF in our countries due to its high incidence, poor screening and insufficient control [12]. Comorbidities were dominated by bronchopneumopathy, anemia (microcytic hypochromic in particular) and AC/AF, *i.e.* 44.57%, 43.37% and 24.10% respectively.

The most frequent comorbidities in the study of Adoubi KA *et al.* [13] were hypertension, anemia and renal dysfunction (respectively 48%, 43.7% and 41.3%). This can be explained by poor socio-economic conditions and therapeutic non-compliance. Furthermore, the predictive factors identified positively correlated with the occurrence of heart failure in our study were: hypertension, diabetes, smoking, the association of hypertension + age and/or diabetes and comorbidities such as anemia, bronchopneumopathy and ischemic attack. Our data are comparable to those of Benin [8] and Morocco [14]. This can be explained by the change in lifestyle and dietary habits, the lack of therapeutic education, the absence of universal health coverage and non-compliance with the low-sodium diet in the elderly. The implementation of the best prophylactic measures, early screening of cardiovascular risk factors and/or comorbidities and prevention of predictive factors could delay the onset of HF in people at risk and improve their clinical condition.

5. Conclusion

Heart failure is a major public health problem and is increasingly becoming a concern for health authorities in sub-Saharan Africa. Early identification and management of predictive factors can significantly reduce morbidity and mortality

from heart failure.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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